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Smart Glasses for the Blind

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A B S T R A C T

Visually impaired people faces many problems in there day today life. The aim of this paper is to help the user navigate without the help of second person. There are many existing systems which help for some specific purpose. But there are no existing systems which help all their basic needs. In this paper, we propose a new method which combines the key aspects of some useful methods and added some extra capabilities for assisting the blinds.

1. Introduction

We can't even imagine how the life of a person who is blind could be. Many of them cannot even walk without the help of second person. From birth till death every second they will be dependent upon their caregivers. The number of disabled people keeps on increasing every day in the world. This situation gives a serious thought process for the scientists and researchers to innovate new solutions for their problems. So this paper proposes an innovative methodology for the blind persons to become independent and happier

2. Literature Survey

The purpose of the existing technologies is to support the day to day tasks in spite of the vogue format in wearable manner. One such template application provided by those technologies is text recognition which will facilitate reading from hardcopy materials. Moreover they aim is to help the blind to overcome the travelling difficulties. It'll realize the obstacle and live the area absolutely victimization the impalpable sensing element and a microcontroller. By victimization the good glass visually impaired folks will come in an enclosed and out of doors surroundings. The existing system also provides a smart technological device to guide the blind people appropriately with a set of eyeglasses.

3. Proposed Work

Sight can be a blend of innovative glasses for the blind people. A person shall be able to infer the things happening in front of them by using the principle of sight exploitation. The raspberry pi controller and Google technique are employed to develop the sight. There are three vital elements such as raspberry controller, camera and a button relevant to the sight. If the push button is pressed on the sight, the sight will take image and the image captured will process and gives voice, which than assist the person, this picture employing a speaker or phone. In parallel with sensors, we use a camera module to know the object in audio form. The best advantage for the proposed system is to detect the object in night mode also. Based upon camera pixels it can

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cover the distance to detect the object. Figure 1 shows the block diagram of the proposed system. Figure 2 shows the schematic of Raspberry PI Controller.

The pin details of the Raspberry controller are given below.
- Power source:- +5V –power output, +3v.3V _power output gnd- ground pin.
- Input output pins:- 26 I/O
- Communication Interface: TWI Interface(SDA, SCL) x2; UART Interface (RXD,TXD)[(GPIO15,GPIO1)]
- Hardware PWM available on GPIO12, GPI013, GPI018, GPIO19

The camera module, push button switch and the rechargeable battery are shown in Figures 3, 4 and 5 respectively. Figure 6 shows the pin diagram for Raspberry controller.
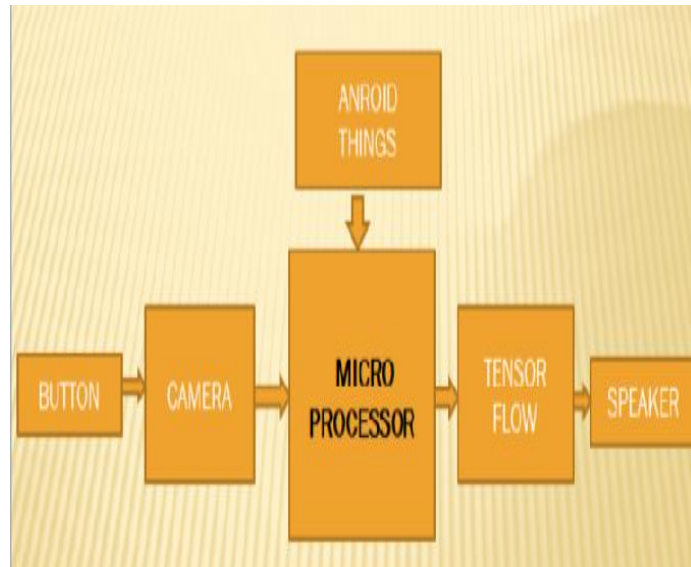

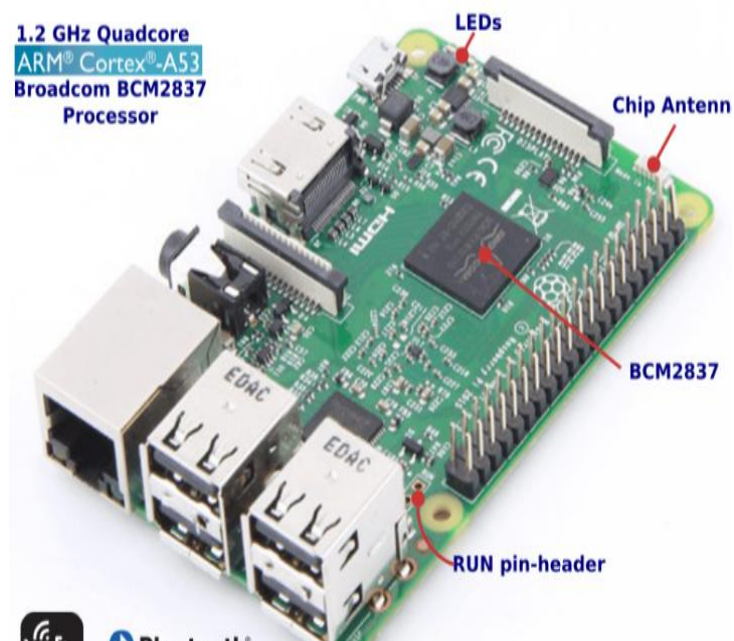Fig 1: Block Diagram of the Proposed system
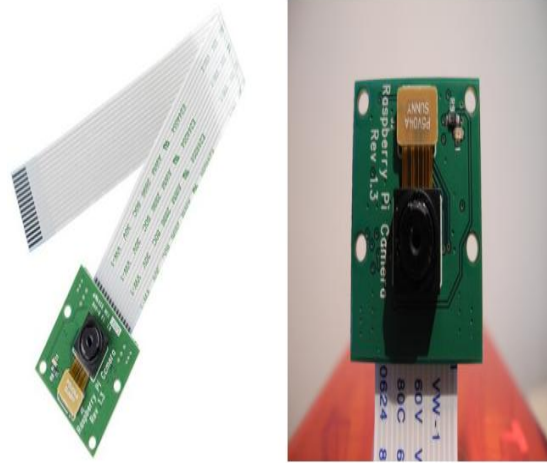

Fig 2: Raspberry Pi

Fig 3: Raspberry Pi Camera Module

Fig 4: Push Button Switch
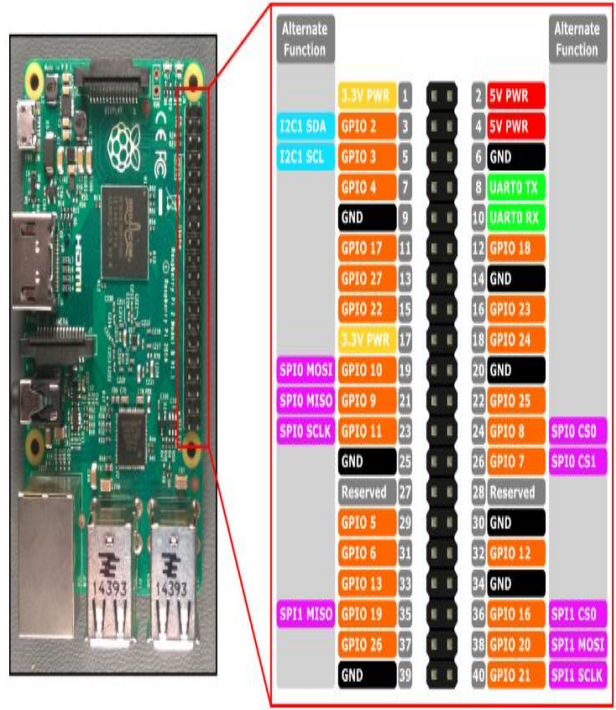

Fig 5: Reachargeable Battery

Fig 6. Pin diagram for Raspberry Pi
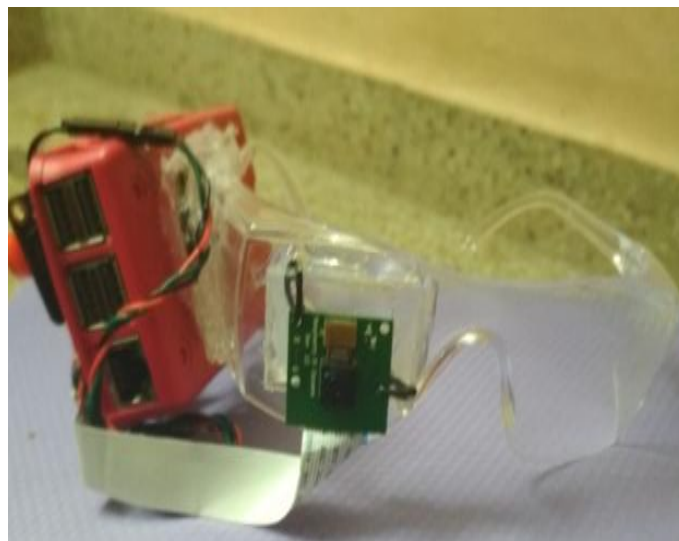
4. Results and Implementation

Fig 7: Hardware Connections of Smart Glasses

The Figure 7 shows the front view of smart glasses with all the connections and setups. To the right side of the glasses we have the sensor attached and headphones is connected to it.

Fig 8: Capturing the Object

The Figure 8 shows the working of smart glasses, in above picture the glasses detect the water bottle and tell them in a audio format. Once the object place before the glasses the camera capture the object and the sensors detects the obstacles, once the camera and sensors done with their respective jobs it gives an audio output through headphones to the user. The processing of the entire system is done through raspberry pi. This device can also be performed as a reader to the user, once the glasses sees any text it decodes it and gives an audio output.

5. Conclusion

This smart glass shall be a blend of glasses for the people who cannot see. A person shall be able to infer the things happening in front of them by using the principle of sight exploitation. Raspberry controller is used to develop the above sensible glasses. If the push button is pressed on the sight, the sight will take image and the image captured will process and gives voice, which than assist the person, this picture employing a speaker or phone. It is mainly used for blind people and also for the military persons

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